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**Method and reactor for the decontamination of  
ground water**

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**Patent Claims**

1. Method for the decontamination of ground water with the use of vertical shaft technology from the wells drilling technique, the manufacture of horizontal filter wells and of reaction agents, where the contaminated ground water (5) in a random height below the ground water level (9) is led into a reactor (1, 2) and conducted through a reaction chamber (1) with at least one reaction agent (2) in dependence on the required residence duration period and is discharged as cleansed ground water (4) in a required height out of the reactor (1,2), where the height of the ground water inlet into the reactor (1,2) is selected depending on the type of pollutant and the location of the pollutant in the ground water (8).
2. Method according to Claim 1, wherein the reactor (1,2) is located vertically into the bottom fond of the horizon carrying the contaminated ground water (5) where, in the zone of the reactor (1,2) envisaged for the ground water inlet, at least one perforated feed line (3) is led out horizontally into the ground water (8) by way of which the contaminated ground water (5) flows into the

reactor (1) filled with reaction agent (2).

3. Method according to Claim 1, wherein  
for the inclusion of pollutants which are heavier  
than water, the ground water is conducted to the  
reactor (1,2) in the lower region and is discharged  
below the ground water level (9) from the upper  
region of the reactor (1,2) as cleansed ground  
water (4).
4. Method according Claim 1, wherein,  
for the coverage of pollutants which are lighter  
than water, the ground water is conducted to the  
reactor (1,2) in the upper region below the ground  
water level (9) and also discharged again after the  
contaminated water (5), for the purpose of  
achieving a longer residence duration period in the  
reactor (1,2), was first directed downwards and  
then upwards along an intermediate wall (10) which  
is open in the lower region of the reactor (1,2).
5. Method according to Claim 1, wherein,  
for the coverage of pollutants which are in the  
middle region of the ground water carrying layer  
(8), the ground water is conducted to the reactor  
(1,2) in the middle region and directed along an  
intermediate wall (10) in a downward direction, and  
there along an intermediate wall into the upper  
region of the reactor (1,2) and withdrawn below the  
ground water level (9).
6. Reactor for the decontamination of ground water in  
the type of a well manufactured in drop shaft

technology, where a reaction chamber (1) is envisaged for accommodating at least one reaction agent (2) and with at least one feed line and at least one outlet line (3,4) in a desirable height, however below the ground water level (9), reaching to the reactor base and is closed off below the ground water level (9).

7. Reactor according to Claim 6, wherein in the reactor (1,2) at least one intermediate wall (10) is included which is open in the upward or in the downward direction.
8. Reactor according to Claim 6, wherein several reactors (1,2) are connected up together.

**Reference Numbers List**

- 1 Drop shaft
- 2 Reactive material
- 3 Gravel casing well (feed line,  
horizontal drainage)
- 4 Outlet flow wake (discharge)
- 5 Pollutant flow wake (contaminated water)
- 6 Non-permeable horizon
- 7 Ground water - direction of flow
- 8 Ground water carrying layer
- 9 Ground water level
- 10 Intermediate wall

### Summary of the Invention

5 The invention concerns a method and a reactor for the decontamination of ground water with the use of the vertical shaft technology from the well drilling technique, of the manufacture of horizontal filter wells and of reaction agents.

10 The task assignment of the invention, to develop a method and a reactor of the type described in the beginning of this document, with which a cost-favorable and selective ground water extraction from random  
15 horizons for the selective and reliable treatment (decontamination) are ensured, is solved in such a way that the contaminated ground water (5) in a random height below the ground water level (9) is directed into a reactor (1,2) and conducted through a reaction  
20 chamber (1) with at least one reaction agent (2) in dependence on the desired residence duration period and is discharged as cleansed ground water (4) in a desired height from the reactor (1,2) where the height of the ground water inlet into the reactor (1,2) is selected  
25 depending on the type of the pollutant and the location of the pollutant in the ground water (8). - Fig. 1 -.